UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAVID A. EDWARDS,
ANDREW M. JONES,
JOHN A. CAREY,
and ANTHONY W. RICH,

Appeal No. 2005-1190
Application 09/410,646[1]

ON BRIEF

Before THOMAS, BARRETT, and BARRY, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134(a) from the final rejection of claims 1 and 3-26.

We affirm.

[1] Application for patent filed October 1, 1999, entitled "Circuit for Monitoring Information of an Interconnect."

BACKGROUND

The invention relates to circuits for monitoring information packets on an interconnect.

Claim 1 is reproduced below.

> 1. A circuit for monitoring information packets including both data and packet routing information, wherein the information packets are put onto an interconnect by one or more modules, wherein each module has a unique identification on the interconnect and wherein the routing information identifies at least one of the modules associated with the data, said circuit comprising:
>
> circuitry for determining if the information in a packet matches one or more conditions; and
>
> circuitry for preventing a module from putting further information packets onto said interconnect if it is determined that information on the interconnect matches said one or more conditions.

THE REFERENCES

The examiner relies on the following references:

Wolff et al. (Wolff)	4,486,826	December 4, 1984
Ardini, Jr. et al. (Ardini)	4,918,693	April 17, 1990
Merrill et al. (Merrill)	4,942,552	July 17, 1990
Pizzica	5,652,754	July 29, 1997
Bershteyn et al. (Bershteyn)	5,678,028	October 14, 1997
Goodrum et al. (Goodrum)	6,032,271	February 29, 2000 (filed June 5, 1996)
Cepulis	6,055,596	April 25, 2000 (filed June 5, 1996)

THE REJECTIONS

Claim 1 stands provisionally rejected under the judicially created doctrine of obviousness-type double patenting over claim 5 of co-pending Application 09/410,642.

Claims 1, 3, 7-9, 11-14, 16, and 18-25 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Wolff.

Claims 1, 16, and 24-26 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Goodrum.

Claims 4-6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wolff and Cepulis.

Claim 10 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Wolff and Ardini.

Claim 15/1 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Wolff and Pizzica.[2]

Claim 17 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Wolff and Bershteyn.

Claim 26 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Wolff and Merrill.

We refer to the final rejection of February 4, 2004 (pages referred to as "FR__") and the examiner's answer of August 23, 2004 (pages referred to as "EA__") for a statement of the examiner's rejection, and to the brief (pages referred to as "Br__") for a statement of appellants' arguments thereagainst.

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[2] Claim 15 is a multiple dependent claim which depends on each of claims 3-14. The examiner rejects only claim 15/1, and says nothing about claims 15/3 through 15/14. The examiner should clarify the status of these claims. We must assume that claims 15/3 through 15/14 stand objected to since, through intention or inadvertence, the claims are not expressly mentioned in a rejection.

OPINION

Obviousness-type double patenting

The brief does not mention the obviousness-type double patenting rejection. Nevertheless, appellants stated during prosecution that "[a] suitable disclaimer will be supplied upon the indication of allowable subject matter" (paper received December 5, 2003, page 7 of 10). Accordingly, it is implicitly acknowledged that the rejection is proper and, in any case, the merits of the rejection are not argued. The obviousness-type double patenting rejection of claim 1 is affirmed.

Grouping of claims

The claims are grouped to stand or fall together (Br3). Accordingly, claim 1 is taken as representative for the anticipation rejections over Wolff and Goodrum.

Anticipation - Wolff

The two limitations argued are whether Wolff teaches: (1) "packets," where the claimed packets are defined as having data and routing information; and (2) "determining if the information in a packet matches one or more conditions" (emphasis added). Arguments not made are considered to be abandoned and have not been addressed. See 37 CFR §§ 1.192(a) ("Any arguments or authorities not included in the brief will be refused consideration by the Board ... unless good cause is shown) &

(c)(8)(iii) (2002) ("the argument shall specify the errors in the rejection"), now 37 CFR § 41.37(c)(1)(vii) (2004). Cf. In re Baxter Travenol Labs., 952 F.2d 388, 391, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991) ("It is not the function of this court to examine the claims in greater detail than argued by an appellant, looking for nonobvious distinctions over the prior art."); In re Watts, 354 F.3d 1362, 1367, 69 USPQ2d 1453, 1457 (Fed. Cir. 2004) ("Just as it is important that the PTO in general be barred from raising new arguments on appeal to justify or support a decision of the Board, it is important that the applicant challenging a decision not be permitted to raise arguments on appeal that were not presented to the Board.").

Packets

The independent claims all recite information packets including data and packet routing information, e.g., "information packets including both data and packet routing information, ... wherein the routing information identifies at least one of the modules associated with the data" (claims 1 and 16). Claim 1 is taken as representative per appellants' grouping of claims.

The examiner states (FR16):

> The Applicant is once again reminded that the definition of a packet in its broadest sense is a serial stream of clocked data bits. In this case a transfer cycle as defined by Wolff et al. would be a packet. Further, the Examiner would like to note that a cycle is four phases and is done over many clock cycles (see Wolff et al.: column 13, line 63 through column 14, line 20). It is well known that a

> packet, when it is processed, is broken into chunks of bits that are processed on different clock cycles. Each phase in the cycle can be considered a chunk of bits. Since there is a phase containing the routing information and a phase containing data, all of which [are] contained in a single cycle, then Wolff et al. teach a packet containing information including both data and packet routing information.

It is argued that the examiner cites no authority for the definition of a packet being "a serial stream of clocked data bits" and this definition contradicts the commonly accepted meaning of the word "packet" as set out in various authoritative definitions of record (Br4-5). It is argued that "packet" is defined as "a group of bits including data and control elements that is switched and transmitted as a unit," Modern Dictionary of Electronics (6th ed., Howard W. Sams & Co. 1998), and the first and second definitions of "packet" in IEEE 100: The Authoritative Dictionary of IEEE Standards and Terms (7th ed. 2000) "are consistent in that they include the concept of a unit of data that is transmitted as a unit" (Br4). Appellant cites to the Newton's Telecom Dictionary (18th ed. 2002) for the proposition that a packet has three principle elements: a header, a text or payload, and a trailer. Newton's also defines "information packet" as "[a] bundle of data sent over a network. The protocol used determines the size and makeup of the packet." (Br5.)

The examiner responds that a "packet" is defined as "a serial stream of clocked data bits" in the seventh definition from the IEEE 100 dictionary and that any standard definition of

packet is acceptable (EA17). The examiner considers appellants' definition from Newton's to be irrelevant since the invention concerns a bus on an integrated circuit and not a telecom system (EA18). The examiner finds that there is nothing in the claims that would limit a packet to a protocol-defined packet (EA18).

The first question is the definition of "packet."

It is not clear whether the examiner provided a copy of the IEEE 100 dictionary to appellants--we do not find a copy of the "packet" definition in the image file wrapper. If a copy was provided or otherwise obtained by appellants, as implied by the argument that the first and second definitions of packet from the IEEE 100 dictionary include the concept of transmitting data as a unit (Br4), appellants should have been able to figure that this was the authority for the examiner's definition. If a copy was not provided, the examiner should have provided appellants with a copy so that they would have had an opportunity to respond. In any case, we have tracked down a copy and provide it with this decision. The seventh definition is a definition of packet from IEEE Std 1394-1995 for a high-speed serial bus. See IEEE Std 1394-1995, pp. i-iii, 5, 6, 12-16, 24, 25, at § 2.2.54 (copy attached). Because we agree with appellants that the definition of a "packet" as "a serial stream of clocked data bits" seems to conflict with the ordinary meaning to one skilled in the art of a group of bits that is transmitted as a unit, we must look at this

standard to see what is intended. The IEEE standard defines an "acknowledgement packet" of 8 bits (§ 2.2.3), a PHY packet which is 64 bits long (§ 2.2.61), and a "primary packet" made up of whole quadlets (a quadlet is 32 bits) (§§ 1.6.5 & 2.2.67). The packets are sent with a data prefix and a data termination (p. 25 "Data packet transmission"). Thus, it appears to us that while a packet is sent as a serial stream of clocked data bits in the 1494-1955 standard, the packet still refers to "[a] unit of data of some finite-size that is transmitted as a unit," IEEE sixth definition; i.e., the serial stream is only one characteristic of a packet on a serial bus. Since the examiner does not appreciate that the seventh definition is for a serial bus, it is not explained how the definition applies to Wolff, which is evidently a parallel bus. Thus, we do not adopt this specialized definition of "packet."

We look to appellant's specification for the meaning of a "packet." Appellants disclose an integrated circuit having a plurality of modules interconnected by a bus 22 where an arbiter 28 arbitrates between requests and responses (Fig. 1; spec. at 3-5). The structure of bus messages is shown in Figs. 2a and 2b. Figure 2a shows the format of a request packet. "The first 8 bits A are used by the bus 22 to identify the destination (usually one of the modules) and thus route the packet." (Spec. at 5, lines 10-12.) Because the modules are connected by a bus,

there is no "switching" in the usual network sense of "circuit switching" or "packet switching" as described in Stallings, Data and computer communications (Macmillan Pub. Co. 1985), pages 6-8. Nor does there appear to be any need for a packet number since packets will not arrive out of turn by traveling different switched paths to a destination. Thus, in the first IEEE 100 definition of a "packet" as "[a] group of binary digits including data and control elements which is switched and transmitted as a composite whole," the phrase "is switched and" is not applicable in the bus environment where there is no switching. "Routing" is done by specifying the address of a module on the bus. It is noted that appellants' packet in Fig. 2a does not have a "trailer," so the definition from Newton's as requiring a trailer does not apply to appellants' packet. We define a "packet" to be "[a] unit of data of some finite-size that is transmitted as a unit," the sixth definition of the IEEE dictionary, which appears to be consistent appellants' desired interpretation.

The next question is whether Wolff discloses packets.

It is not clear why the examiner considers the definition of a packet as a serial stream of clocked data bits to be a better definition than the broad definition of transmitting a unit of data and it is not clear how Wolff meets the examiner's definition of a packet as a serial stream of clocked data bits. In any case, we do not accept this definition.

The examiner argues that Wolff meets appellants' definition of a packet (EA17). The examiner finds that Wolff discloses that the "A" and "B" buses each carry address information which the examiner interprets to be "routing information" (EA18). The examiner finds that units 12 through 28 are connected to all of the buses of the bus structure and, therefore, there is more than one source and destination possible, "hence the necessity for an address or packet routing information" (EA18). The examiner repeats the reasoning from the final rejection that "a transfer cycle as defined by Wolff et al. would be a packet" (Br19).

Appellants argue that Wolff shows two parallel buses, the "A bus" and "B bus," that function to duplicate each other and each carries an identical set of signals which would not be confused as a "packet" by anyone skilled in the art of data communication (Br3) and "[t]his set of signals is akin to a circuit-switched connection in which a circuit connection is made between communicating ends of the bus" (Br3-4). It is argued that the claims require packet routing information (Br5):

> Packet routing information, described generally at page 5 of the specification, is a particular type of information that does not appear in a bus-type interconnect of the Wolff reference. The set of signals in Wolff et al. is not routed--it is coupled end-to-end by the physical interconnect. The set of signals in Wolff et al. do not contain routing information as there is but one source and one destination possible.

It is argued that, in Wolff, the size of the set of information is determined by the number of signal lines in the bus, and not

by a protocol used, whereas "[i]n contrast, the claims call for packets of information in the ordinary meaning of that term where the packet size is determined by a protocol choice, not a hardware limitation" (Br5). It is further argued that the Manual of Classification recognizes "that packet switching is a distinct, defined type of switching that is different from circuit switched type connections as shown in the Wolff et al. reference" (Br5).

The examiner disagrees with the argument that the claims call for packets of information where packet size is determined by a protocol choice, not a hardware limitation, because "[t]here is no mention whatsoever of a size of the information or a protocol in any of the claims" (EA18). The examiner disagrees with the description of Wolff as a circuit switched-type connection (EA18-19).

Because both appellants and Wolff disclose transferring information on a bus, it is not clear how appellants' packet differs from the collection of signals on the buses in Wolff other than in name. Wolff discloses "[t]he A and B buses each carry an identical set of cycle-definition, address, data, parity and other signals that can be compared to warn of erroneous information transfer between units" (col. 3, lines 61-64), which the examiner finds to teach data and address (routing) information (EA18). We do not see the error in this finding.

Appellants discloses transferring information on a bus, with the wide arrow symbol in Fig. 1 indicating a multi-bit parallel bus, which is the same mode of transferring information in Wolff. Since the information is transferred by appellants' bus, it seems that appellants' packet is determined by the hardware limitation or that the hardware defines the protocol. Appellants' "routing" information is a group of 8 bits "used by the bus 22 to identify the destination (usually one of the modules) and thus route the packet" (spec. at 5, lines 10-12), which appears to be the same as Wolff's address on a bus. "Routing" has not been shown to require anything more than specifying the destination for the data, which is performed by the address in Wolff. The examiner correctly notes that "there is more than one source and one destination possible in the system of Wolff" (EA18). Appellants' bus hardware is like Wolff's and does not require any "switching" or "packet switching" or "circuit switching" in the usual sense of electrically disconnecting one element and electrically connecting another element: the modules are always connected to the bus and share information based on the address. Thus, appellants' arguments about the invention involving packet switching and Wolff involving circuit switching are not accurate. Thus, we find that the claimed "packet" reads on the collection of signals on the buses in Wolff, which include data and address

(routing) information. The fact that Wolff does not use the term "packet" does prevent anticipation.

One or more conditions

Appellants further argue that "claims 1, 16 and 25 call for a determination of whether the information in a packet satisfies one or more conditions" (Br5) and "[b]ecause Wolff et al. compare a binary signal to another binary signal there is one and only one 'condition' that can be satisfied" (Br5-6).

The examiner interprets the limitation to be met with only one condition (EA19).

We agree with the examiner that the limitation of "matches one or more conditions" is met by matching one condition, which is clearly done by Wolff.

Conclusion

For the reasons stated, the rejection of claims 1, 3, 7-9, 11-14, 16, and 18-25 over Wolff is affirmed.

Anticipation - Goodrum

The examiner relies on the abstract, Fig. 15A, the table in column 14, and column 87, lines 41-50 and 57-64 (FR8-9).

Appellants argue that Goodrum, like Wolff, does not show or suggest monitoring information-containing packets (Br6). It is argued that Goodrum describes several bus types, but none of these are described as packet bus architectures or as conveying

packets and that Goodrum does not once use the word "packet" (Br6). It is argued that the abstract of Goodrum does not disclose "an interconnect and a plurality of modules connected to said interconnect for putting packets of information onto the interconnect" as stated by the examiner (Br6). Appellants argue that Fig. 15A and column 14 have been pointed to as showing packets, but Goodrum does not call these illustrations packets (Br6). It is argued that they are disclosed as phases of a transaction, or contents of a memory queue, and are not a unit of finite size that is transmitted as a unit (Br6).

The examiner responds that the data in Goodrum fits the definition of a packet and the table in column 14 discloses the packet fields including both data and packet routing information, which are finite size (EA20-21). The examiner notes that the abstract describes an interconnect and a plurality of modules connected to the interconnect (EA21).

Goodrum is a long and complicated reference. Nevertheless, Goodrum teaches a plurality of modules connected by a bus (interconnect), where if a faulty condition is detected (such as a bus hang condition) a device is turned off to prevent further information from being placed on the bus (abstract). Figure 15A, on which the examiner relies, teaches that information is transmitted on the bus in an address and data phase (e.g., col. 57, lines 5-9). We agree with the examiner that the data

and address information constitute a "packet" as broadly defined, where the address is "packet routing information." The fact that Goodrum does not describe the format of its data as a "packet" does not mean that it is not a "packet" as that term has been broadly defined. Since appellants also disclose that information is transmitted on a bus, it is not clear how appellants' packet is intended to distinguish over address and data on any bus other than in name alone. Because no error has been shown in the examiner's position under the broad definition of "packet," the rejection of claims 1, 16, and 24-26 over Goodrum is affirmed.

Obviousness

Appellants argue that the additional references to Cepulis, Ardini, Pizzica, Bershteyn, and/or Merrill do not cure the deficiencies in Wolff, and that the word "packet" does not appear even one time in any of these references (Br7). This is not a separate argument for patentability of these dependent claims. Since the merits of the rejections of individual claims have not been argued, the rejections stand or fall together with the rejections of the independent claims. The rejections of claims 4-6, 10, 15/1, 17, and 26 are affirmed. Since claims 15/3 through 15/14 are not mentioned in the statement of the rejections, these claims are not included in our decision.

CONCLUSION

The rejections of claims 1, 3-14, 15/1, and 16-26 are affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a). See 37 CFR § 1.136(a)(1)(iv) (2004).

AFFIRMED

JAMES D. THOMAS
Administrative Patent Judge)
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LEE E. BARRETT) BOARD OF PATENT
Administrative Patent Judge) APPEALS
) AND
) INTERFERENCES
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LANCE LEONARD BARRY)
Administrative Patent Judge)

Attachments:

IEEE 100: The Authoritative Dictionary of IEEE Standards and Terms (7th ed. 2000), definition of "packet"

Stallings, Data and computer communications (Macmillan Publ. Co. 1985), pages 6-8.

IEEE Std 1394-1995, pp. i-iii, 5, 6, 12-16, 24, 25

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